



American Chamber of Commerce Ireland

Department of Public Expenditure and Reform

Submission on the Mid-Term Review of the Capital Plan

30 April 2017

Executive Summary: The Capacity to Grow

The American Chamber of Commerce Ireland's vision for Ireland is that it should aim to have Ireland recognised well within the world's top decile as a place to work and live. That will require a significant uplift in planning activity and capital investment.

To maintain foreign direct investment (FDI) Ireland must compete on the basis of its available talent pool, innovation and operational track record and the capacity of its digital and physical infrastructure to support growth. Each is linked around a theme of place-making: creating attractive urban/city regions to live, work and retain and attract talent and inward investment.

This submission sets out the strategic context within which US firms operate in Ireland and identifies key priorities for the framework if the competitive position of Ireland is to be maintained and enhanced to give Ireland the capacity to grow. Highlights include;

- **Raise Investment Activity:** Projected growth points to a need to lift Ireland's level of capital investment towards a long-term goal of around 4% of GDP in a sustainable manner, to enable economic and demographic growth.
- **Back Ireland's Flagship City:** Ireland's needs to invest in Dublin as its recognised flagship metropolitan city to act as a beacon for the country's investment attractiveness with world-class global and all-island interconnectivity.
- **Develop Identifiable City-Regions:** The clear identification of city-regions with the scale to act as drivers of economic growth in Ireland's regions, each offering a unique, but complimentary value proposition to Ireland's flagship city.
- **Establish Rapid Access Corridors and Interconnectivity:** The identification of high speed transport corridors to access the Capital or a City Region – each a nexus of economic activity.
- **Reinforce Ireland's Digital Leadership:** It is vital Ireland has the high-speed broadband coverage demanded by our knowledge-intensive economy and avoid digital, and thereby economic, blackspots. Ireland needs to invest in world-class cloud use to transform how citizens engage with government to access services.
- **Boost Accommodation Supply:** Investment and reforms are vital to improve accommodation provision and availability in areas with good physical and digital connectivity, schools and amenities. The managed rental sector in urban centres requires particular focus.
- **Energy and Water:** Investment is required to ensure adequate capacity to support enterprise locations, especially around main urban centres. Greater continental connectivity, network reach and strengthening of national energy grids should feature in the planning framework.
- **Provide for International Access:** A two-hour transfer window to an international airport is required for business continuity to access customers, suppliers and welcome site visits.
- **Support Talent and Innovation:** Adequate resourcing of the innovation and skills/education system have an important place in any framework and plan. The long term objective should be to raise gross expenditure in research and development (GERD) to 3% of GDP.
- **Delivery:** Place the NPF onto a statutory footing with an effective governance and implementation structure, while making reforms in the planning process to narrow the length of time it takes for projects to gain final planning approval.
- **Spatial Diplomacy:** The American Chamber is strongly supportive of calls to have long-term planning and co-operation on an all-island basis included within the NPF.

Context: Economic and Demographic Change

The American Chamber's priority is that Ireland remains **a unique transatlantic trade and investment gateway and a location of choice for US inward investment to Europe**. The National Planning Framework (NPF) is being conceived during a period of growth, but not one without significant uncertainty. As a small open economy, Ireland's prospects are dependent on international trade and influenced by global investment flows. The current era of globalisation may have plateaued— with greater protectionism sentiment on the rise as reflected in political changes in the USA and the UK (Brexit vote) in 2016, thus trade and investment policies around the world may inhibit further moves towards global interdependence. The NPF will be an important pillar to future-proof Ireland and sustain the economy through these changing environments.

Inward investment to Ireland continues to make a positive contribution to Ireland's economic and social progress. It provides not only rewarding career opportunities – but also acts as a channel for knowledge transfer and the ongoing transformation of the Irish-based enterprise and their respective industrial clusters. Today, 150,000 people are directly employed in over 700 US firms located in Ireland, accounting for over 74% of all employment supported by the Industrial Development Authority of Ireland (IDA). The value of this investment has reached \$343b and contributes €13bn annually in expenditure to the Irish economy in terms of payrolls, goods and services employed in their operations.

The performance of the FDI and exporting sectors has led Ireland back **to strong economic growth** with positive impact on employment levels, labour market participation, net migration and income growthⁱ. Forecasts to 2020 suggest growth rates of between 3-3.5% per annum with the country returning to full employment at the start of 2018, perhaps soonerⁱⁱ. However, productivity growth has slowed – from 2% in 2000 to just 0.5% today.

Ireland's population is expanding on the back of a return to strong economic growth. Having increased by 4% since 2011, it stands at 4.75m in 2016. **Projections suggest that the population could grow to nearly 6m by 2040** - the horizon for this planning frameworkⁱⁱⁱ. Unless Ireland breaks from international trends, most of the population will live in the main city-regions. On an all-island basis, it's expected that half the island's population of 8m will live in the Dublin-Belfast corridor. Another 1.5m will live in the hinterlands of Waterford, Cork, Limerick, Galway, Sligo and Letterkenny-Derry^{iv}.

This expansion will challenge the country's administration to provide essential services and associated infrastructure over the next 20 years in housing, transportation, energy, health, education and water services. On housing, its provision has the challenge of not only providing for the potential increases in population, but also for the backlog of those currently seeking suitable accommodation today.

This submission acknowledges at the outset that Ireland has made enormous strides to become the vibrant, high performing economy that it is today. The membership of the American Chamber believes that **Ireland needs this NPF to provide the long term strategic priorities upon which planning authorities will make decisions** knowing that it is part of a national template to deliver very specific goals. Those goals will only be achieved if there is joined-up cross-sectoral decision making by those entities planning for providing public services and infrastructure, supported by the allocation of the appropriate levels of capital investment. Those sectors are not only different Government Departments, agencies and utility providers – but also regional, local and city authorities.

Ambition and Investment

There is a strong interdependence between the planning, development and creation of an attractive living environment and of enterprise development. Companies are attracted to invest in locations where they can access talent. Talent in turn is attracted to and retained in locations where people will want to live and work, and where the surrounding infrastructures are supportive of work and lifestyle. Establishing a strong sense of place contributes to creating an environment which is appealing for entrepreneurship, for multinational and local business investment.

Investment Levels : The American Chamber concurs with the analysis of the National Competitive Council^v that **the need for upgrading and modernisation of Ireland’s infrastructure will require targeted and prioritised investment to address infrastructural bottlenecks** which if not addressed and planned for, will constrain growth in the economy by dampening productivity growth, and increasing costs.

According to the World Economic Forum, **the quality of infrastructure has been in decline** since 2010’s fiscal retrenchment which severely curtailed capital investment programmes. Ireland’s investment in transport infrastructure at 0.4% of GDP ranked Ireland 28th within the OECD^{vi} and well below the OECD average of 0.8%. Further, the analysis of the Irish Fiscal Advisory Council^{vii} suggests that capital investment is at levels well below its long run average (2.3% of GDP versus 3.7%). Forecasts suggest little change up to 2021.

While welcoming the increases in investment signalled in the National Capital Investment Plan (2016-2021), these levels of investment are insufficient to address recent underinvestment, catch-up with the demands of a growing economy and population and narrow the gap between Ireland and our key competitors in physical, digital and knowledge infrastructure. In that context the American Chamber believes that **the NPF needs the support of an accelerate Capital Investment Programme that moves investment towards a long-term goal of around 4% of GDP** in a sustainable manner.

FDI Drivers: **Global locational surveys of multinational investors suggest a preference for regions of scale¹**. Increasingly the value proposition of a location is determined by the anchor of a city and its wider largely urban catchment area. The increased concentration of population in cities/urban areas makes these a nexus for economic activity and talent. When combined with the impacts of digitalisation and automation, investment decision makers view urban locations as their preferred location of choice – often delivering unique value that is supported by, but distinct from, the attractiveness of a nation alone.

In addition, the existence of available talent, established clusters of innovation and accessible infrastructure can be a deciding factor in investment decisions – it gives investors the prospect of establishing and turning-up operations rapidly. If this availability is the result of a well devised plan, it gives confidence that the capacity exists for future development. The American Chamber is of the view – that given the right business environment in Ireland, US footprint can grow to over 1000 US firms with an investment footprint of \$480b by 2025^{viii}.

¹ See Appendix 1

Implications:

The **vision of the American Chamber of Commerce for the NPF supported by its Capital Investment Plan is that it should aim to have Ireland recognised well within the world's top decile as a place to work and live.** The American Chamber wants Ireland to be recognised as one of the most developed, ambitious and welcoming locations in the world for existing and new business investments, and a highly supportive environment for their future growth. It is in that context that the American Chamber recommends that the NPF needs to establish the following overarching priorities:

- Raise Investment Activity: Projected growth points to a need to lift Ireland's capital investment levels towards a long-term goal of around 4% of GDP in a sustainable manner to enable economic and demographic growth.
- Support Ireland's Flagship City: With an increasing trend of FDI locating in larger urban areas, **Ireland must compete with a recognised international-scale city as a flagship for the entire country.** This has a key role in attracting investment. Dublin is a transatlantic magnet for service/digital media-centric inward investment and the American Chamber expects this demand to continue, if it can absorb that opportunity and provide its population with world-class metropolitan, all-island and international interconnectivity. The American Chamber agrees with the contention that if Dublin is underperforming, Ireland is underperforming.
- Develop Identifiable City-Regions: The **clear identification of city-regions with the scale to act as drivers of economic growth** in Ireland's regions, each offering a unique but complimentary value proposition to Ireland's flagship city. While flagship capitals play their part in the intense global competition for investors – decision makers will consider other locations that have the desired minimum critical mass with an offering that matches their needs. In the Irish context that provides the context for spatial planning – a focus on city-regions with the capacity to grow.
- Establish Rapid Access Corridors and Interconnectivity: The **identification of high speed transport corridors to access the Capital or a City Region which will be the nexus of economic activity is necessary to realise their potential.** The Framework should set indicative targets for the maximum times for transfers to be achieved...for example within 60 minutes. Where practicable **public transport should be the priority.** Consideration should be given to the fact that there may be important industrial, social and educational clusters outside of city centres.

The aim should be to plan around these corridors and at defined intervals rather than dispersed along. Planning **density should be higher around these development intervals to include provision for commercial and industrial development, housing, schools and utilities.** For example – aiming to have 80% of the population within a defined distance from a high speed corridor which then is less than 60 minute journey from either the capital or a city-regional centre. A similar approach should be taken to the Capital, where with an effective transit system allowing for more housing, enterprise and amenities to cluster around these intervals (or towns, suburbs) should allow for higher density development, and thus improve the economics of public services and transport provision.

- Reinforce Ireland's Digital Leadership: It is **vital Ireland has the broadband coverage demanded by our knowledge-intensive economy and avoid digital, and thereby economic, blackspots**. The American Chamber welcomes the Government's ambition to ensure that the population of Ireland has access to quality fibre based broadband services across the island in its 'National Broadband Plan'. There has been a step-up in the provision of digital infrastructure among Ireland's competitors with basic broadband now widely available throughout the EU. For Ireland, the challenge is to improve the access to fast broadband outside the main population centres to add workplace flexibility, push-up labour participation and widen the available skills pool in city-regions. In addition, the mobility of users must be considered – especially as they move along the main transport arteries of the country. Plans should be matched by adequate planning, regulatory and financial commitments and be reflected in the Capital Investment Plan (CIP) where private investment shortfalls arise.

Specifically, with respect to the wider 'Digital Agenda', the American Chamber leadership believes that **Ireland can be positioned as a global centre of excellence for all things data and digital** within the EU. Every sector and every organisation now has data and digitisation at the heart of its strategy. Ireland needs to invest in the right kind of infrastructure at a national and local government level to take advantage of the digital transformation. This can be transformative in how citizens engage with government to access services.

It will require state alignment with long term economic and industrial planning that actively exploits public-private opportunities for data-driven innovation and world class cloud use. In parallel, the maintenance of a robust data protection and cyber security reputation, citizen trust and ubiquitous rapid broadband access are essential conditions for the sector to thrive. This needs to be reflected in the NPF.

- Boost Accommodation Supply: The American Chamber of Commerce supports investment plans and reforms that improve housing provision and availability in areas with good physical and digital connectivity, schools and amenities. The American Chamber is strongly of the view that provision of accommodation is a critical pressure point in all of the main city-regions that requires continued prioritization within the NPF, most especially in Dublin. The current 'Rebuilding Ireland' initiative by Government is welcome, underway and should positively address the "starter home" segment of the market. **Provision in the short-term and entry-level rental accommodation, together with the emergence of a larger stock of well-managed apartment-homes is worthy of priority attention**. In addition, ancillary facilities - such as schools, childcare, roads and car parking are also viewed as essential requirements for employment growth.
- Provide for International Access: **A two-hour transfer window to an international airport is required for business continuity to access customers, suppliers and welcome site visits**. Investment and planning must facilitate greater air connectivity with global centres of economic activity over the period of the framework.
- Talent and Innovation: Adequate resourcing for the capital requirements of both the innovation and skills/education system have an important place within the framework's supporting **Capital**

Investment Plan. It should realise the Government’s stated ambition to make Ireland’s Education and Training Service the best in Europe. In particular, **Ireland must improve its performance in the areas of science, technology, engineering and mathematics (STEM) and life-long learning (LLL)** to adequately resource the knowledge intensity of economic activity.

The American Chamber believes that the strategic goal for Ireland should be to attract further public-private investment through proven partnerships between US FDI and Ireland’s research, development and innovation (RDI) system which would, within ten years, double national spending on RDI by 2025. **The long term objective should be to raise Government expenditure in research and Development (GERD) to 3% of GDP.**

Science Foundation Ireland’s (SFI) focus on “Excellence and Impact” is a sound strategy for inward investment. Investment must seek to retain the current RDI investment in scientific excellence, but provide new resources to build out research centres of scale focused on the application of knowledge and product and technology development.

In particular, the American Chamber is strongly supportive **of investment in an Advanced Manufacturing Research Centre** to reinforce Ireland’s leadership in world class advanced manufacturing as advances in robotics, technology and the digital marketplace makes automation more flexible and offers transformational benefits to many industrial processes. In addition, over the next period of Innovation 2020 **resourcing a ‘Challenge-Centric’ research and innovation funding stream will be critical to achieve societal or economic impacts**, as well as sustaining broad support for continued public investment in RDI.

Future Priorities

Dublin Ireland's Flagship City:

Ireland's needs to **invest** to have a recognised flagship metropolitan city act as a beacon for the country's investment attractiveness with world-class global and all-island physical interconnectivity and digital capacity.

Dublin is a transatlantic magnet for service/digital media-centric inward investment and the American Chamber of Commerce expects this demand to continue, if it can absorb that opportunity. In-step with American Chamber recommendations on planning targets around rapid access corridors, Dublin needs certain and reasonable travel and transfer times in and around the city, its orbital route and the main arteries of access to adjoining urban areas. This should be a key goal.

In welcoming the publication of the Government's Action Plan for Housing, **the American Chamber of Commerce reiterates that there is a strong link between residential planning, development and the creation of attractive places to live, with foreign direct investment.** The American Chamber supports investment plans and reforms that improve the aim of improving housing provision and availability/density in areas with good physical and digital connectivity, schools and amenities.

Further, a transport plan giving mobility to its citizens must be consistent with residential and commercial location strategies for the entire capital area, the wider connected country and the demands of its entire people. Dublin needs a credible funding commitment that reflects its 'Greater Dublin' population footprint, economic activity and required geographic connections, ensuring the right balance between integrated public transport services and private transportation to access clusters of employment and centres of education.

The American Chamber encourages the on-time and on-budget delivery of existing commitments on Metro-North, Luas cross-city and the expansion of Dublin Airport's capacity. Planned enhancements to the M50, greater use of high-speed bus corridors and the expanded capacity on existing rail/light-rail services have important contributions to make to easing congestion.

At a national level, an enhancement of rail services to Dublin port would reduce the pressure brought on the M50. In the medium-term the consideration of new orbital routes to connect suburban and commercial centres should seek to reduce the use of the M50 for shorter interconnections, allowing it to serve its main function in taking traffic away from the city centre.

Ireland's City-Regions: **The NPF and the Capital Investment Plan should clearly identify Ireland's city-regions as drivers of economic growth and a nexus for development** to take the pressure off the greater Dublin region. The American Chamber is strongly supportive of existing initiatives to develop strong city-regions. Each initiative seeks to define their respective critical mass anchored around established clusters of economic activity and infrastructures (including Universities/IOTs, air and port access) with a commitment to work in partnership to improve the cohesiveness of the region.

- **Southern Region:** With a population approaching 600,000, the southern region anchored around Cork is Ireland's established TIER-2 city after Dublin. With important clusters of manufacturing and services in the life science and ICT sector, it remains Ireland's second engine of economic growth complementing the Dublin region. The American Chamber believes that Cork has a key role to play regionally and nationally with the capacity to outperform over the next 20 years.
- **Mid-West Limerick City Region:** The collaboration between the Local Authorities of Clare, Tipperary and Limerick, together with partners in Shannon Group, the University of Limerick, Limerick Institute of Technology, Shannon Foynes Port and the Mid-West Action Plan for Jobs seeks to develop the Mid-West Limerick City Region into a dynamic 'Tier-2' City Region. The American Chamber supports calls for this to be identified in the NPF as a focus for growth which can exert critical mass leverage to contribute towards national development and competitiveness.
- **North West City Region:** The North West City Region Initiative has the potential to deliver effective regional development on a cross-border basis to the advantage of its catchment area. This local government partnership is driven by co-operation between the authorities of Donegal and Derry City & Strabane District Councils and enjoys the endorsement of both respective Governments. The American Chamber supports calls that it should be explicitly referenced in the National Planning Framework.
- **The Atlantic Economic Corridor (AEC):** The mission of the AEC is to focus attention on delivering a well-connected corridor with a 'city of scale' impact from Limerick through Galway to Sligo. It seeks to give an alternative nexus to Cork and Dublin to develop infrastructure, attract Irish and multinational investment, and grow jobs and income in vibrant communities. This is an initiative of the Chambers of Commerce of Limerick, Shannon, Ennis, Galway, Roscommon, Mayo, Sligo, with the American Chamber of Commerce Ireland.

Following a rollout of motorway routes during the first decade of the century, and as the economy expands, it is timely to continue the task of maintaining this endowment, addressing specific regional gaps and making needed new investment to complete the following projects.

The development of advance building solutions has an important role in attracting new cycles of investment into regions. Such investment should be part of a joined-up approach to planning for transport, residential, schooling and other social assets needed when new jobs are being created.

Southern & Western Priorities: Building on the significant enhancements to the road network linking the capital with the main cities of the west and south, there remains vitally important opportunities to enhance connectivity with the following projects;

- In Munster, the delivery of the M20 project between Cork and Limerick would significantly enhance the Atlantic/Western economic corridor by creating a world-class backbone transport artery, linking

population centres, industrial clusters, ports and air hubs and thus improving regional connectivity and competitiveness to retain and attract investment.

- In Cork, the immediate requirement for the N20 Croom-Mallow and the N28 Ringaskiddy-Cork upgrade projects and the N21 Ballyvourney-Macroom bypass;
- In Cork and Galway, the outer ring roadway projects;
- In Galway the completion of the M18 to Tuam, and improved access to Parkmore's industrial zone.

Northwest Accessibility: The investment attractiveness of the Letterkenny-Derry region would be significantly enhanced with a step-up in road connectivity. The region is currently an outlier in not being connected to Dublin and its international airport with an inter-urban motorway.

The development of the A5/N2 between Derry and Dublin remains the goal for American Chamber of Commerce members in the region. The American Chamber strongly supports the western and north-western spurs to Ireland's Core T-TEN Network which is eligible for EU priority funding. Including this 'western arc' provides a critical signal to support and encourage regional economic development in these regions by expanding logistical capacity potential and improving accessibility.

In the short to medium term there is an urgency to the following projects;

- The N14 Letterkenny to Lifford route with connectivity to the A5 (with supporting improvement and bypass projects) to dual carriageway standard;
- In Sligo, while the N4-M4 route upgrade to dual carriageway standard remains the objective, the timely delivery of the N4 Collooney to Castlebaldwin development is greatly anticipated.
- A step forward in connectivity into Mayo will be achieved with the delivery of the planned N5 Westport to Turlough project. The completion of the entire N5 upgrade should follow.

Utilities

Energy: Investment is required to ensure adequate regional/local capacity to support investment locations, especially in the main urban centres. Greater interconnection is also a priority, including delivery of the North-South Interconnector, and also with the continent to ensure energy security and generation diversity. Consideration should be given to extend the county's gas infrastructure network, in particular to include penetration into the centres of the Northwest to improve their attractiveness for investment.

Water: The American Chamber continues to support efforts to develop and resource a strategic approach to water services and management. Future inward investment opportunities will arise with more certainty as to water availability, quality, treatment capacity and price competitiveness. A sustained commitment to capital expenditure is required to secure quality and affordable provision. In particular, Dublin's critical capacity constraint is a risk to future industrial as well as population growth and must be addressed with urgency.

Sustainability

Ireland's climate change commitments will influence the construction of the Framework. The American Chamber is of the view that the high-level recommendations made in this submission supports this agenda by encouraging city-region development where population growth, supporting infrastructure

and industrial activity is concentrated – thus favouring higher density of social and economic activity. **World-class innovation should be central to infrastructure provision** – innovation seeking to position Ireland as one of the most cost competitive countries for rolling out quality infrastructure.

Spatial Diplomacy

A planning structure and Capital Investment Plan to address the Ireland-UK relationship is required to recognise and include all-island interdependencies. The north-south context has shared talent pools, needs for improved physical interconnections in terms of road (A5/N2), rail (high-speed Dublin-Belfast services), energy and public services (health and education). In addition, the risks of a return to border and customs controls will require investment – to implement, yet mitigate the impacts of the outcomes of the UK's exit from the EU. **The American Chamber is strongly supportive of calls to have long-term planning and co-operation on an all-island basis included within the NPF and supported by the Capital Investment Plan.**

Appendix 1

Foreign Direct Investment Drivers^{ix}

Global locational surveys of multinational investors suggest a preference for regions of scale with: vibrant urban centres, established clusters of industry, access to skilled people, international connectivity, strong digital-telecommunications infrastructure, robust energy, water and waste infrastructure, engaged research and proven innovation capabilities, and mature sub-supplier and services sectors. With this, the provision of appropriate and competitive accommodation solutions is a key driver behind winning FDI projects where time to market is critical.

Competition for such investment is intensifying as jurisdictions see the added benefits that strong investment links bring to strengthen trade relations, future proof the economy from economic shocks and disruptive industrial upheavals. The American Chamber's business leaders see the following trends for decisions on future investment locations:

- **Adapting for Digitalisation and Automation:** The ability to leverage digitalisation, e-connectivity and revolutionary low-cost manufacturing technology (e.g. 3D printing and robotics) to provide a greater array of customised output close to end-users at low cost will alter the pattern of investment decisions. The result could be to drive investment towards concentrations of higher economic activity as the disadvantage of distance and economies of scale are removed. Further, changes to thinking on transport will arise with the rise of autonomous vehicles.
- **Considering Talent over Low-Cost:** The knock on impact of changing supply chains may alter the relative cost-competitiveness of lower labour cost locations for inward investment. The knowledge-intensity of delivering products and services will bring complete advantage to more developed economic centres with advanced digital infrastructure, talent pool and skills pipeline and proximity to accessible markets.
- **Examining Metro over Country Locations:** Increasingly the value proposition of a location is determined by the anchor of a city and its wider largely urban catchment area. The growth of city or urban populations has been a relentless trend – in 1960 the World Health Organisation estimated that 34% of the world's population could be considered as 'urban' dwellers. In 2014, that figure had increased to 54%, even as the world's population doubled. A Bank of America Meryl Lynch^x study forecasts that by 2070 that share will rise to more than 70%.
- **Doing More in Less Locations:** Organisations are looking for opportunities to conduct more activity at less locations points where it makes business logic. In Europe, those locations that have the ability to service and support diverse markets offer advantages than the traditional country-by-country approach. The development of the European Single Market for goods, and the promise of progress on services, suggests that this trend will gain momentum in the coming decades.
- **Preparing to Serve New Markets:** Leaders are auditing their operations to ensure that they can serve new and emerging markets. Whether these represent changes in customer preference and new product categories in the developed markets, the purchasing power of consumers in regions around the world or the growth in demand as populations alter – decisions need to be made to manage the

risk to business and supply-chain continuity and ensure access to markets, talent and infrastructure required to continue to succeed.

The increased concentration of population in cities/urban areas makes these a nexus for economic activity and talent. When combined with impacts of digitalisation and automation, investment decision makers view urban locations as their preferred location choice – often delivering unique value that is supported by, but distinct from, the attractiveness of a nation alone.

Proximity of people, enterprise, social and knowledge activities provide a unique value in a number of ways by defining the quantity of an accessible pool of talent available to an enterprise (usually within 60-90km), the potential for knowledge spill-overs usually associated by the positive impacts of clustering activities (usually within 1km square), and the economic viability of providing shared infrastructure such as transport, education and training, healthcare and utilities. (Somewhere between, depending on the scale of the urban area)^{xi}.

ⁱ OECD Ireland Survey. <http://www.oecd.org/eco/surveys/Ireland-2015-overview.pdf>

ⁱⁱ Eurostat Winter Economic Forecast for Ireland. <https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/>

ⁱⁱⁱ Central Statistics Office of Ireland, Population and Labour Force Projections 2016-2046.

^{iv} Irish Academy of Engineering, Spatial Planning Report 2016.

^v National Competitiveness Council of Ireland, 'Ireland's Competitiveness Scorecard 2016' Report July 2016.

^{vi} World Economic Forum, Global Competiveness Report 2016

^{vii} Irish Fiscal Advisory Council, Analytical Note No. 9: Public Capital: Investment, Stocks and Depreciation, June 2016

^{viii} American Chamber of Commerce Ireland, Ireland's Innovation Pathway Report, May 2015

^{ix} American Chamber of Commerce, US-Ireland Economic Relationship Report, 2016 and IBM's Global Location Trends 2016 Report

^x Bank of American Meryl Lynch, Why Cities Are The Future of Global Growth, 2016

^{xi} Centre for Cities, Building the Northern Powerhouse, June 2016